

**AMENDMENTS TO THE CLAIMS:**

**Please amend the claims as follows. Please add new claims 75-79.**

1. (Currently Amended) An optical signal transmission system including at least one optical signal transmitter and at least one optical signal receiver,

wherein said at least one optical signal transmitter generates at least one optical identifier belonging to and being different in wavelength from at least one main optical signal;

wherein said at least one optical signal transmitter performs a wavelength-multiplexing of said at least one main optical signal and said at least one optical identifier to transmit at least one wavelength-multiplexed optical signal to said at least one optical signal receiver;

wherein said at least one optical signal receiver performs a wavelength-demultiplexing of said at least one wavelength-multiplexed optical signal to generate said at least one main optical signal and said at least one optical identifier; and

wherein said at least one optical signal receiver further verifies whether ~~or not~~ a correct transmission route is established, based on said at least one optical identifier with reference to at least one set of corresponding data, which include a first relationship in correspondence between said at least one main optical signal and said at least one optical identifier.

2. (Currently Amended) The optical signal transmission system as claimed in

claim 1, wherein said at least one optical signal receiver performs said verification by comparing said first relationship included in said at least one set of corresponding data to a second relationship between said at least one main optical signal received by said at least one optical signal receiver and said at least one optical identifier detected by said at least one optical signal receiver.

3. (Original) The optical signal transmission system as claimed in claim 1, wherein said at least one optical signal receiver performs said verification without subjecting said at least one main optical signal to any photoelectric conversion, and independently from any transmission rate and any format of said at least one main optical signal.

4. (Currently Amended) The optical signal transmission system as claimed in claim 1, wherein said at least one optical signal transmitter further generates said at least one set of corresponding data, and supplies said at least one optical signal receiver with said at least one set of corresponding data.

5. (Currently Amended) The optical signal transmission system as claimed in claim 4, further including a memory being coupled to said optical signal transmitter and said optical signal receiver, and said memory storing said at least one set of corresponding data.

6. (Currently Amended) The optical signal transmission system as claimed in claim 4, further including a data storing station being coupled to said optical signal transmitter and said optical signal receiver, and said data storing station storing said at least

one set of corresponding data.

7. (Currently Amended) The optical signal transmission system as claimed in claim 1, wherein each of said at least one optical signal transmitter and said at least one optical signal receiver previously stores said at least one set of corresponding data.

8. (Currently Amended) The optical signal transmission system as claimed in claim 1, wherein said at least one optical signal receiver further includes:

a notifying unit ~~for receiving~~ that receives a result of said verification from said at least one optical signal receiver, and ~~for notifying~~ whether said correct transmission route is verified between said main optical signal transmitted by said at least one optical signal transmitter and said main optical signal received by said at least one optical signal receiver.

9. (Currently Amended) The optical signal transmission system as claimed in claim 1, further including a wavelength-multiplexed optical network ~~having~~ including a plurality of wavelength-multiplexed optical signal transmission routes, through which said at least one wavelength-multiplexed optical signal is transmitted from said at least one optical signal transmitter to said at least one optical signal receiver.

10. (Currently Amended) The optical signal transmission system as claimed in claim 1, further including an optical switch ~~having~~ including a plurality of selectable wavelength-multiplexed optical signal transmission routes, through which said at least one wavelength-multiplexed optical signal is transmitted from said at least one optical signal

transmitter to said at least one optical signal receiver.

11. (Currently Amended) The optical signal transmission system as claimed in claim 1, wherein said at least one set of corresponding data includes a relationship in correspondence between at least one wavelength of said at least one main optical signal and at least one reference electric frequency component of at least one frequency corresponding to said at least one main optical signal;

wherein said at least one optical signal receiver detects at least one electric frequency component from said at least one optical identifier wavelength-demultiplexed; and

wherein said at least one optical signal receiver verifies whether said correct transmission route is established based on said at least one electric frequency component with reference to said at least one reference electric frequency component included in said at least one set of corresponding data.

12. (Currently Amended) The optical signal transmission system as claimed in claim 11, wherein each of said at least one optical signal transmitter further includes:

at least one set of a main optical signal generator ~~for generating~~ that generates said at least one main optical signal, and an optical identifier generator ~~for generating~~ that generates said at least one optical identifier and said at least one set of corresponding data; and

a multiplexer ~~for wavelength-multiplexing~~ that wavelength-multiplexes said at least one main optical signal and said at least one optical identifier to generate said wavelength-multiplexed optical signal, and

wherein each of said at least one optical signal receiver further includes:

a demultiplexer ~~for wavelength-multiplexing~~ that wavelength-multiplexes said wavelength-multiplexed optical signal to generate said at least one main optical signal and said at least one optical identifier;

at least one set of a main optical signal receiver ~~for receiving~~ that receives said at least one main optical signal wavelength-demultiplexed; and

an optical identifier receiver ~~for receiving~~ that receives said at least one optical identifier and said at least one set of corresponding data, and said optical identifier receiver further verifies whether said correct transmission route is established based on said at least one optical identifier with reference to said at least one set of corresponding data.

13. (Currently Amended) The optical signal transmission system as claimed in claim 12, wherein each of said at least one optical identifier generator further includes:

a frequency modulator ~~for generating~~ that generates a frequency-modulated signal at a frequency corresponding to each of said at least one main optical signal; and

an optical identifier generator ~~for generating~~ that generates said at least one optical identifier frequency-modulated by said frequency-modulated signal, and

wherein each of said at least one optical identifier receiver further includes:

a photoelectric converter ~~for performing~~ that performs a photoelectric conversion of each of said at least one optical identifier into an detected electrical signal;

a frequency detector ~~for detecting~~ that detects an electric frequency component from said detected electrical signal; and

a frequency comparator ~~for comparing~~ that compares said electric frequency component detected to said at least one reference electric frequency component included in

said at least one set of corresponding data.

14. (Original) The optical signal transmission system as claimed in claim 12, wherein each of said at least one optical signal transmitter further includes:

plural sets of said main optical signal generators and said optical identifier generators, and

wherein each of said at least one optical signal receiver further includes:

plural sets of said main optical signal receivers and said optical identifier receivers, wherein said main optical signal generators respectively generate said main optical signals with wavelengths different from each other;

wherein said optical identifier generators respectively generate said optical identifiers which belong to said main optical signals generated from said main optical signal generators, respectively, and said optical identifier generators further respectively generate plural sets of said corresponding data which respectively belong to said main optical signals generated from said main optical signal generators and said optical identifiers generated from said optical identifier generators;

wherein said main optical signal receivers receive said main optical signals from respectively corresponding ones of said main optical signal generators;

wherein said optical identifier receivers respectively receive said optical identifiers from respectively corresponding ones of said optical identifier generators, and said optical identifier receivers respectively receive said plural sets of said corresponding data from respectively corresponding ones of said optical identifier generators; and

wherein each of said optical identifier receivers verifies whether said correct

transmission route is established based on each corresponding one of said optical identifiers with reference to each corresponding set of said corresponding data.

15. (Currently Amended) The optical signal transmission system as claimed in claim 1, wherein each of said at least one set of corresponding data includes a relationship in correspondence between a first wavelength of said main optical signal and a second wavelength of said optical identifier uniquely belonging to said main optical signal, so that said second wavelength uniquely corresponds to said first wavelength;

wherein said at least one optical signal receiver selectively detects said at least one optical identifier with said second wavelength; and

wherein said at least one optical signal receiver verifies whether said correct transmission route is established based on said detected at least one optical identifier with reference to said at least one set of corresponding data.

16. (Currently Amended) The optical signal transmission system as claimed in claim 15, wherein each of said at least one optical signal transmitter further includes:

at least one set of a main optical signal generator ~~for generating~~ that generates said main optical signal with said first wavelength, and an optical identifier generator ~~for generating~~ that generates said optical identifier with said second wavelength and ~~for generating~~ that generates said at least one set of corresponding data; and

a multiplexer ~~for wavelength-multiplexing~~ that wavelength-multiplexes said at least one main optical signal and said at least one optical identifier to generate said wavelength-multiplexed optical signal, and

wherein each of said at least one optical signal receiver further includes:

a demultiplexer ~~for wavelength-multiplexing~~ that wavelength-multiplexes said wavelength-multiplexed optical signal to generate said at least one main optical signal and said at least one optical identifier;

at least one set of a main optical signal receiver ~~for that~~ selectively receiving receives said at least one main optical signal with said first wavelength, and an optical identifier receiver ~~for that~~ selectively receiving receives said at least one optical identifier with said second wavelength, and wherein said optical identifier receiver further verifies whether said correct transmission route is established based on said at least optical identifier with reference to said at least one set of corresponding data.

17. (Currently Amended) The optical signal transmission system as claimed in claim 16, wherein each of said at least one optical identifier generator further includes:

an optical identifier generator ~~for generating~~ that generates said optical identifier ~~having including~~ said second wavelength, and

wherein each of said at least one main optical signal receiver further includes:

a first optical filter ~~for that~~ selectively transmitting transmits said main optical signal with said first wavelength; and

a main optical signal receiver ~~for receiving~~ that receives said main optical signal with said first wavelength transmitted through said first optical filter;

wherein each of said at least one optical identifier receiver further includes:

a second optical filter ~~for that~~ selectively transmitting transmits said optical identifier with said second wavelength; and



an optical identifier detector ~~for detecting~~ that detects said optical identifier with said second wavelength transmitted through said second optical filter; and ~~for comparing that~~ compares said optical identifier ~~having~~ including said second wavelength to said at least one set of corresponding data.

18. (Currently Amended) The optical signal transmission system as claimed in claim 16, wherein each of said at least one optical signal transmitter further includes:

plural sets of said main optical signal generators and said optical identifier generators, wherein each of said at least one optical signal receiver further includes:

said main optical signal receivers and said optical identifier receivers,

wherein said main optical signal generators respectively generate said main optical signals with wavelengths different from each other;

wherein said optical identifier generators respectively generate said optical identifiers ~~having~~ including wavelengths respectively correspond to said wavelengths of said main optical signals generated from said main optical signal generators, and said optical identifier generators further respectively generate plural sets of said corresponding data which respectively belong to said main optical signals generated from said main optical signal generators and said optical identifiers generated from said optical identifier generators;

wherein said main optical signal receivers receive said main optical signals from respectively corresponding ones of said main optical signal generators;

wherein said optical identifier receivers respectively receive said optical identifiers from respectively corresponding ones of said optical identifier generators, and said optical identifier receivers respectively receive said plural sets of said corresponding data from

respectively corresponding ones of said optical identifier generators; and

wherein each of said optical identifier receivers verifies whether said correct transmission route is established based on each corresponding one of said optical identifiers with reference to each corresponding set of said corresponding data.

19. (Currently Amended) The optical signal transmission system as claimed in claim 15, wherein each of said at least one optical signal transmitter further includes:

at least one set of a main optical signal generator ~~for generating~~ that generates said main optical signal with said first wavelength, and an optical identifier generator ~~for generating~~ that generates said optical identifier with said second wavelength and ~~for generating~~ that generates said at least one set of corresponding data; and

a multiplexer ~~for wavelength-multiplexing~~ that wavelength-multiplexes said at least one main optical signal and said at least one optical identifier to generate said wavelength-multiplexed optical signal, and

wherein each of said at least one optical signal receiver further includes:

an arrayed waveguide grating ~~for wavelength-demultiplexing~~ that wavelength-demultiplexes said wavelength-multiplexed optical signal to generate said at least one main optical signal with said first wavelength and said at least one optical identifier with said second wavelength;

at least one set of a main optical signal receiver ~~for that selectively receiving~~ receives said at least one main optical signal with said first wavelength, and an optical identifier receiver ~~for that selectively receiving~~ receives said at least one optical identifier with said second wavelength, and wherein said optical identifier receiver further verifies whether said

correct transmission route is established based on said at least optical identifier with reference to said at least one set of corresponding data.

20. (Currently Amended) The optical signal transmission system as claimed in claim 19, wherein each of said at least one optical identifier generator further includes:

an optical identifier generator ~~for generating~~ that generates said optical identifier ~~having~~ including said second wavelength, and

wherein each of said at least one main optical signal receiver further includes:

a main optical signal receiver ~~for receiving~~ that receives said main optical signal with said first wavelength transmitted through said arrayed waveguide grating;

wherein each of said at least one optical identifier receiver further includes:

an optical identifier detector ~~for detecting~~ that detects said optical identifier with said second wavelength transmitted through said arrayed waveguide grating; and ~~for comparing~~ that compares said optical identifier ~~having~~ including said second wavelength to said at least one set of corresponding data.

21. (Currently Amended) An optical signal transmitter including:

a first transmitter function block ~~for generating~~ that generates at least one optical identifier belonging to and being different in wavelength from at least one main optical signal; and

a second transmitter function block ~~for performing~~ that performs a wavelength-multiplexing of said at least one main optical signal and said at least one optical identifier to transmit at least one wavelength-multiplexed optical signal,

wherein said at least optical identifier references at least one set of corresponding data, which include a first relationship in correspondence between said at least one main optical signal and said at least one optical identifier.

22. (Currently Amended) The optical signal transmitter as claimed in claim 21, wherein said first transmitter function block further generates at least one set of corresponding data, which include a first relationship in correspondence between said at least one main optical signal and said at least one optical identifier.

23. (Currently Amended) The optical signal transmitter as claimed in claim 22, wherein said second transmitter function block sends said at least one set of corresponding data to a memory, so that said memory stores said at least one set of corresponding data.

24. (Currently Amended) The optical signal transmitter as claimed in claim 22, wherein said second transmitter function block sends said at least one set of corresponding data to a data storing station, so that said data storing station stores said at least one set of corresponding data.

25. (Currently Amended) The optical signal transmitter as claimed in claim 21, wherein said first transmitter function block previously stores said at least one set of corresponding data.

26. (Currently Amended) The optical signal transmitter as claimed in claim 21,

wherein said second transmitter function block transmits said at least one wavelength-multiplexed optical signal through a wavelength-multiplexed optical network ~~having~~ including a plurality of wavelength-multiplexed optical signal transmission routes.

27. (Currently Amended) The optical signal transmitter as claimed in claim 21, wherein said second transmitter function block transmits said at least one wavelength-multiplexed optical signal through an optical switch ~~having~~ including a plurality of selectable wavelength-multiplexed optical signal transmission routes.

28. (Currently Amended) The optical signal transmitter as claimed in claim 21, wherein said at least one set of corresponding data includes a relationship in correspondence between at least one wavelength of said at least one main optical signal and at least one reference electric frequency component of at least one frequency corresponding to said at least one main optical signal.

29. (Currently Amended) The optical signal transmitter as claimed in claim 28, wherein said first transmitter function block further includes:

at least one set of a main optical signal generator ~~for generating~~ that generates said at least one main optical signal, and an optical identifier generator ~~for generating~~ that generates said at least one optical identifier and said at least one set of corresponding data; and

wherein said second transmitter function block further includes:

a multiplexer ~~for wavelength-multiplexing~~ that wavelength-multiplexes said at least

one main optical signal and said at least one optical identifier to generate said wavelength-multiplexed optical signal.

30. (Currently Amended) The optical signal transmitter as claimed in claim 29, wherein said at least one optical identifier generator further includes:

a frequency modulator ~~for generating~~ that generates a frequency-modulated signal at a frequency corresponding to each of said at least one main optical signal; and

an optical identifier generator ~~for generating~~ that generates said at least one optical identifier frequency-modulated by said frequency-modulated signal.

31. (Original) The optical signal transmitter as claimed in claim 29, wherein said first transmitter function block further includes:

plural sets of said main optical signal generators and said optical identifier generators, wherein said main optical signal generators respectively generate said main optical signals with wavelengths different from each other; and

wherein said optical identifier generators respectively generate said optical identifiers which belong to said main optical signals generated from said main optical signal generators, respectively, and said optical identifier generators further respectively generate plural sets of said corresponding data which respectively belong to said main optical signals generated from said main optical signal generators and said optical identifiers generated from said optical identifier generators.

32. (Currently Amended) The optical signal transmitter as claimed in claim 21,

wherein each of said at least one set of corresponding data includes a relationship in correspondence between a first wavelength of said main optical signal and a second wavelength of said optical identifier uniquely belonging to said main optical signal, so that said second wavelength uniquely corresponds to said first wavelength.

33. (Currently Amended) The optical signal transmitter as claimed in claim 32, wherein said first transmitter function block further includes:

at least one set of a main optical signal generator ~~for generating~~ that generates said main optical signal with said first wavelength, and an optical identifier generator ~~for generating~~ that generates said optical identifier with said second wavelength and ~~for generating~~ that generates said at least one set of corresponding data; and

wherein said second transmitter function block further includes:

a multiplexer ~~for wavelength-multiplexing~~ that wavelength-multiplexes said at least one main optical signal and said at least one optical identifier to generate said wavelength-multiplexed optical signal.

34. (Currently Amended) The optical signal transmitter as claimed in claim 33, wherein each of said at least one optical identifier generator further includes:

an optical identifier generator ~~for generating~~ that generates said optical identifier ~~having~~ including said second wavelength.

35. (Currently Amended) The optical signal transmitter as claimed in claim 33, wherein said first transmitter function block further includes:

plural sets of said main optical signal generators and said optical identifier generators,  
wherein said main optical signal generators respectively generate said main optical signals with wavelengths different from each other; and

wherein said optical identifier generators respectively generate said optical identifiers ~~having~~ including wavelengths respectively correspond to said wavelengths of said main optical signals generated from said main optical signal generators, and said optical identifier generators further respectively generate plural sets of said corresponding data which respectively belong to said main optical signals generated from said main optical signal generators and said optical identifiers generated from said optical identifier generators.

36. (Currently Amended) The optical signal transmitter as claimed in claim 32, wherein said first transmitter function block further includes:

at least one set of a main optical signal generator ~~for generating~~ that generates said main optical signal with said first wavelength, and an optical identifier generator ~~for generating~~ that generates said optical identifier with said second wavelength and ~~for generating~~ that generates said at least one set of corresponding data; and

wherein said second transmitter function block further includes:

a multiplexer ~~for wavelength-multiplexing~~ that wavelength-multiplexes said at least one main optical signal and said at least one optical identifier to generate said wavelength-multiplexed optical signal.

37. (Currently Amended) The optical signal transmitter as claimed in claim 36, wherein each of said at least one optical identifier generator further includes:



an optical identifier generator ~~for generating~~ that generates said optical identifier ~~having~~ including said second wavelength.

38. (Currently Amended) An optical signal receiver including:  
a first receiver function block ~~for performing~~ that performs a wavelength-demultiplexing of at least one wavelength-multiplexed optical signal to generate at least one main optical signal and at least one optical identifier; and  
a second receiver function block ~~for verifying~~ that verifies whether ~~or not~~ a correct transmission route is established, based on said at least optical identifier with reference to at least one set of corresponding data, which include a first relationship in correspondence between said at least one main optical signal and said at least one optical identifier.

39. (Currently Amended) The optical signal receiver as claimed in claim 38, wherein said second receiver function performs said verification by comparing said first relationship included in said at least one set of corresponding data to a second relationship between said at least one main optical signal received by said at least one optical signal receiver and said at least one optical identifier detected by said at least one optical signal receiver.

40. (Original) The optical signal receiver as claimed in claim 38, wherein said second receiver function block performs said verification without subjecting said at least one main optical signal to any photoelectric conversion, and independently from any transmission rate and any format of said at least one main optical signal.

41. (Currently Amended) The optical signal receiver as claimed in claim 38, wherein said second receiver function block receives said at least one set of corresponding data stored in a memory.

42. (Currently Amended) The optical signal receiver as claimed in claim 38, wherein said second receiver function block receives said at least one set of corresponding data stored in a data storing station.

43. (Currently Amended) The optical signal receiver as claimed in claim 38, wherein said second receiver function block previously stores said at least one set of corresponding data.

44. (Currently Amended) The optical signal receiver as claimed in claim 38, further including:

a notifying unit ~~for receiving~~ that receives a result of said verification from said at least one optical signal receiver, and ~~for notifying~~ that notifies whether said correct transmission route is verified between said main optical signal transmitted and said main optical signal received by said at least one optical signal receiver.

45. (Currently Amended) The optical signal receiver as claimed in claim 38, wherein said first receiver function block receives said at least one wavelength-multiplexed optical signal transmitted from a wavelength-multiplexed optical network ~~having~~ including a

plurality of wavelength-multiplexed optical signal transmission routes.

46. (Currently Amended) The optical signal receiver as claimed in claim 38, wherein said first receiver function block receives said at least one wavelength-multiplexed optical signal transmitted from an optical switch ~~having~~ including a plurality of selectable wavelength-multiplexed optical signal transmission routes.

47. (Currently Amended) The optical signal receiver as claimed in claim 38, wherein said at least one set of corresponding data includes a relationship in correspondence between at least one wavelength of said at least one main optical signal and at least one reference electric frequency component of at least one frequency corresponding to said at least one main optical signal;

wherein said second receiver function block detects at least one electric frequency component from said at least one optical identifier wavelength-demultiplexed; and

wherein said second receiver function block verifies whether said correct transmission route is established based on said at least one electric frequency component with reference to said at least one reference electric frequency component included in said at least one set of corresponding data.

48. (Currently Amended) The optical signal receiver as claimed in claim 47, wherein said first receiver function block further includes:

a demultiplexer ~~for wavelength-multiplexing~~ that wavelength-multiplexes said wavelength-multiplexed optical signal to generate said at least one main optical signal and

said at least one optical identifier; and

at least one set of a main optical signal receiver ~~for receiving~~ that receives said at least one main optical signal wavelength-demultiplexed; and

wherein said second receiver function block further includes:

an optical identifier receiver ~~for receiving~~ that receives said at least one optical identifier and said at least one set of corresponding data, and said optical identifier receiver further verifies whether said correct transmission route is established based on said at least one optical identifier with reference to said at least one set of corresponding data.

49. (Currently Amended) The optical signal receiver as claimed in claim 48, wherein each of said at least one optical identifier receiver further includes:

a photoelectric converter ~~for performing~~ that performs a photoelectric conversion of each of said at least one optical identifier into an detected electrical signal;

a frequency detector ~~for detecting~~ that detects an electric frequency component from said detected electrical signal; and

a frequency comparator ~~for comparing~~ that compares said electric frequency component detected to said at least one reference electric frequency component included in said at least one set of corresponding data.

50. (Original) The optical signal receiver as claimed in claim 48, wherein said optical signal receiver further includes:

plural sets of said main optical signal receivers and said optical identifier receivers, wherein said main optical signal receivers receive said main optical signals from

respectively corresponding ones of said main optical signal generators;

wherein said optical identifier receivers respectively receive said optical identifiers from respectively corresponding ones of said optical identifier generators, and said optical identifier receivers respectively receive said plural sets of said corresponding data from respectively corresponding ones of said optical identifier generators; and

wherein each of said optical identifier receivers verifies whether said correct transmission route is established based on each corresponding one of said optical identifiers with reference to each corresponding set of said corresponding data.

51. (Currently Amended) The optical signal receiver as claimed in claim 38, wherein each of said at least one set of corresponding data includes a relationship in correspondence between a first wavelength of said main optical signal and a second wavelength of said optical identifier uniquely belonging to said main optical signal, so that said second wavelength uniquely corresponds to said first wavelength;

wherein said second receiver function block selectively detects said at least one optical identifier with said second wavelength; and

wherein said second receiver function block verifies whether said correct transmission route is established based on said detected at least one optical identifier with reference to said at least one set of corresponding data.

52. (Currently Amended) The optical signal receiver as claimed in claim 51, wherein said first receiver function block further includes:

a demultiplexer ~~for wavelength-demultiplexing~~ that wavelength-demultiplexes said

wavelength-multiplexed optical signal to generate said at least one main optical signal and said at least one optical identifier; and

wherein said second receiver function block further includes:

at least one set of a main optical signal receiver ~~for that~~ selectively ~~receiving~~ receives said at least one main optical signal with said first wavelength, and an optical identifier receiver ~~for that~~ selectively ~~receiving~~ receives said at least one optical identifier with said second wavelength, and wherein said optical identifier receiver further verifies whether said correct transmission route is established based on said at least optical identifier with reference to said at least one set of corresponding data.

53. (Currently Amended) The optical signal receiver as claimed in claim 52, wherein each of said at least one main optical signal receiver further includes:

a first optical filter ~~for that~~ selectively ~~transmitting~~ transmits said main optical signal with said first wavelength; and

a main optical signal receiver ~~for-receiving~~ that receives said main optical signal with said first wavelength transmitted through said first optical filter;

wherein each of said at least one optical identifier receiver further includes:

a second optical filter ~~for that~~ selectively ~~transmitting~~ transmits said optical identifier with said second wavelength; and

an optical identifier detector ~~for-detecting~~ that detects said optical identifier with said second wavelength transmitted through said second optical filter; and ~~for-comparing that~~ compares said optical identifier ~~having~~ including said second wavelength to said at least one set of corresponding data.

54. (Original) The optical signal receiver as claimed in claim 52, wherein said first receiver function block further includes said main optical signal receivers and said second receiver function block further includes said optical identifier receivers,

wherein said main optical signal receivers receive said main optical signals from respectively corresponding ones of said main optical signal generators;

wherein said optical identifier receivers respectively receive said optical identifiers from respectively corresponding ones of said optical identifier generators, and said optical identifier receivers respectively receive said plural sets of said corresponding data from respectively corresponding ones of said optical identifier generators; and

wherein each of said optical identifier receivers verifies whether said correct transmission route is established based on each corresponding one of said optical identifiers with reference to each corresponding set of said corresponding data.

55. (Currently Amended) The optical signal receiver as claimed in claim 51, wherein said first receiver function block further includes:

an arrayed waveguide grating ~~for wavelength-demultiplexing~~ that wavelength-demultiplexes said wavelength-multiplexed optical signal to generate said at least one main optical signal with said first wavelength and said at least one optical identifier with said second wavelength; and

at least one main optical signal receiver ~~for that~~ selectively receiving receives said at least one main optical signal with said first wavelength; and

wherein said second receiver function block further includes:

an optical identifier receiver ~~for that~~ selectively ~~receiving~~ receives said at least one optical identifier with said second wavelength, and wherein said optical identifier receiver further verifies whether said correct transmission route is established based on said at least one optical identifier with reference to said at least one set of corresponding data.

56. (Currently Amended) The optical signal receiver as claimed in claim 55, wherein each of said at least one main optical signal receiver further includes:

a main optical signal receiver ~~for receiving~~ that receives said main optical signal with said first wavelength transmitted through said arrayed waveguide grating; and

wherein each of said at least one optical identifier receiver further includes:

an optical identifier detector ~~for detecting~~ that detects said optical identifier with said second wavelength transmitted through said arrayed waveguide grating; and ~~for comparing~~ that compares said optical identifier ~~having~~ including said second wavelength to said at least one set of corresponding data.

57. (Currently Amended) A method of monitoring establishment of a correct transmission route between at least one optical signal transmitter and at least one optical signal receiver, said method including:

~ generating at least one optical identifier belonging to and being different in wavelength from at least one main optical signal;

performing a wavelength-multiplexing of said at least one main optical signal and said at least one optical identifier to transmit at least one wavelength-multiplexed optical signal to said at least one optical signal receiver;



performing a wavelength-demultiplexing of said at least one wavelength-multiplexed optical signal to generate said at least one main optical signal and said at least one optical identifier; and

verifying whether ~~or not~~ a correct transmission route is established, based on said at least optical identifier with reference to at least one set of corresponding data, which include a first relationship in correspondence between said at least one main optical signal and said at least one optical identifier.

58. (Currently Amended) The method as claimed in claim 57, wherein said verification is made by comparing said first relationship included in said at least one set of corresponding data to a second relationship between said at least one main optical signal received by said at least one optical signal receiver and said at least one optical identifier detected by said at least one optical signal receiver.

59. (Original) The method as claimed in claim 57, wherein said verification is made without subjecting said at least one main optical signal to any photoelectric conversion, and independently from any transmission rate and any format of said at least one main optical signal.

60. (Currently Amended) The method as claimed in claim 57, further including:  
sending said at least one set of corresponding data from said at least one optical signal transmitter to said at least one optical signal receiver.

61. (Currently Amended) The method as claimed in claim 60, further including:  
storing said at least one set of corresponding data in a memory being coupled to said  
optical signal transmitter and said optical signal receiver.

62. (Currently Amended) The method as claimed in claim 60, further including:  
storing said at least one set of corresponding data in a data storing station being  
coupled to said optical signal transmitter and said optical signal receiver.

63. (Currently Amended) The method as claimed in claim 57, further including:  
previously storing said at least one set of corresponding data in each of said at least  
one optical signal transmitter and said at least one optical signal receiver.

64. (Original) The method as claimed in claim 57, further including:  
notifying whether said correct transmission route is verified between said main optical  
signal transmitted by said at least one optical signal transmitter and said main optical signal  
received by said at least one optical signal receiver.

65. (Currently Amended) The method as claimed in claim 57, further including:  
transmitting said at least one wavelength-multiplexed optical signal from said at least  
one optical signal transmitter to said at least one optical signal receiver through a wavelength-  
multiplexed optical network ~~having~~ including a plurality of wavelength-multiplexed optical  
signal transmission routes.

66. (Currently Amended) The method as claimed in claim 57, further including:  
transmitting said at least one wavelength-multiplexed optical signal from said at least one optical signal transmitter to said at least one optical signal receiver through an optical switch ~~having~~ including a plurality of selectable wavelength-multiplexed optical signal transmission routes.

67. (Currently Amended) The method as claimed in claim 57, wherein said at least one set of corresponding data includes a relationship in correspondence between at least one wavelength of said at least one main optical signal and at least one reference electric frequency component of at least one frequency corresponding to said at least one main optical signal; and

wherein said method further includes:

detecting at least one electric frequency component from said at least one optical identifier wavelength-demultiplexed; and

verifying whether said correct transmission route is established based on said at least one electric frequency component with reference to said at least one reference electric frequency component included in said at least one set of corresponding data.

68. (Currently Amended) The method as claimed in claim 67, further including:  
generating a frequency-modulated signal at a frequency corresponding to each of said at least one main optical signal; and

generating said at least one optical identifier frequency-modulated by said frequency-modulated signal;

performing a photoelectric conversion of each of said at least one optical identifier into an detected electrical signal;

detecting an electric frequency component from said detected electrical signal; and

comparing said electric frequency component detected to said at least one reference electric frequency component included in said at least one set of corresponding data.

69. (Currently Amended) The method as claimed in claim 57, wherein each of said at least one set of corresponding data includes a relationship in correspondence between a first wavelength of said main optical signal and a second wavelength of said optical identifier uniquely belonging to said main optical signal, so that said second wavelength uniquely corresponds to said first wavelength; and

wherein said method further includes:

selectively detecting said at least one optical identifier with said second wavelength;

and

verifies whether said correct transmission route is established based on said detected at least one optical identifier with reference to said at least one set of corresponding data.

70. (Currently Amended) The method as claimed in claim 69, further including:  
generating said optical identifier ~~having~~ including said second wavelength;  
selectively transmitting said main optical signal with said first wavelength;  
selectively transmitting said optical identifier with said second wavelength;  
detecting said optical identifier with said second wavelength transmitted through said second optical filter; and

comparing said optical identifier ~~having~~ including said second wavelength to said at least one set of corresponding data.

71. (Currently Amended) A method of transmitting an optical signal, including:  
generating at least one optical identifier belonging to and being different in wavelength from at least one main optical signal; ~~and~~  
performing a wavelength-multiplexing of said at least one main optical signal and said at least one optical identifier to transmit at least one wavelength-multiplexed optical signal to said at least one optical signal receiver, and  
referencing at least one set of corresponding data by said at least one optical identifier,  
said at least one set of corresponding data include a first relationship in correspondence  
between said at least one main optical signal and said at least one optical identifier.

72. (Currently Amended) A method of receiving an optical signal transmitted, including:  
performing a wavelength-demultiplexing of said at least one wavelength-multiplexed optical signal to generate said at least one main optical signal and said at least one optical identifier; and  
verifying whether ~~or not~~ a correct transmission route is established, based on said at least one optical identifier with reference to at least one set of corresponding data, which include a first relationship in correspondence between said at least one main optical signal and said at least one optical identifier.

73. (Currently Amended) The method as claimed in claim 72, wherein said verification is made by comparing said first relationship included in said at least one set of corresponding data to a second relationship between said at least one main optical signal received by said at least one optical signal receiver and said at least one optical identifier detected by said at least one optical signal receiver.

74. (Original) The method as claimed in claim 72, wherein said verification is made without subjecting said at least one main optical signal to any photoelectric conversion, and independently from any transmission rate and any format of said at least one main optical signal.

75. (New) An optical signal transmission system including at least one optical signal transmitter and at least one optical signal receiver,

wherein said at least one optical signal transmitter generates at least one optical identifier belonging to and being different in wavelength from at least one main optical signal;

wherein said at least one optical signal transmitter performs a wavelength-multiplexing of said at least one main optical signal and said at least one optical identifier to transmit at least one wavelength-multiplexed optical signal to said at least one optical signal receiver;

wherein said at least one optical signal receiver performs a wavelength-demultiplexing of said at least one wavelength-multiplexed optical signal to generate said at least one main optical signal and said at least one optical identifier; and

wherein said at least one optical signal receiver further verifies whether a correct transmission route is established, based on said at least one optical identifier with reference to at least one set of corresponding data, which include a first relationship in correspondence between said at least one main optical signal and said at least one optical identifier,

wherein said at least one optical signal receiver performs said verification by comparing said first relationship included in said at least one set of corresponding data to a second relationship between said at least one main optical signal received by said at least one optical signal receiver and said at least one optical identifier detected by said at least one optical signal receiver.

76. (New) An optical signal transmitter including:

a first transmitter function block that generates at least one optical identifier belonging to and being different in wavelength from at least one main optical signal; and

a second transmitter function block that performs a wavelength-multiplexing of said at least one main optical signal and said at least one optical identifier to transmit at least one wavelength-multiplexed optical signal,

wherein said at least one set of corresponding data includes a relationship in correspondence between at least one wavelength of said at least one main optical signal and at least one reference electric frequency component of at least one frequency corresponding to said at least one main optical signal.

77. (New) An optical signal receiver including:

a first receiver function block that performs a wavelength-demultiplexing of at least

one wavelength-multiplexed optical signal to generate at least one main optical signal and at least one optical identifier; and

a second receiver function block that verifies whether a correct transmission route is established, based on said at least optical identifier with reference to at least one set of corresponding data, which include a first relationship in correspondence between said at least one main optical signal and said at least one optical identifier,

wherein said second receiver function block performs said verification without subjecting said at least one main optical signal to any photoelectric conversion, and independently from any transmission rate and any format of said at least one main optical signal.

78. (New) A method of monitoring establishment of a correct transmission route between at least one optical signal transmitter and at least one optical signal receiver, said method including:

generating at least one optical identifier belonging to and being different in wavelength from at least one main optical signal;

performing a wavelength-multiplexing of said at least one main optical signal and said at least one optical identifier to transmit at least one wavelength-multiplexed optical signal to said at least one optical signal receiver;

performing a wavelength-demultiplexing of said at least one wavelength-multiplexed optical signal to generate said at least one main optical signal and said at least one optical identifier; and

verifying whether a correct transmission route is established, based on said at least



optical identifier with reference to at least one set of corresponding data, which include a first relationship in correspondence between said at least one main optical signal and said at least one optical identifier,

wherein said verification is made by comparing said first relationship included in said at least one set of corresponding data to a second relationship between said at least one main optical signal received by said at least one optical signal receiver and said at least one optical identifier detected by said at least one optical signal receiver.

79. (New) A method of receiving an optical signal transmitted, including:

performing a wavelength-demultiplexing of said at least one wavelength-multiplexed optical signal to generate said at least one main optical signal and said at least one optical identifier; and

verifying whether a correct transmission route is established, based on said at least one optical identifier with reference to at least one set of corresponding data, which include a first relationship in correspondence between said at least one main optical signal and said at least one optical identifier,

wherein said verification is made by comparing said first relationship included in said at least one set of corresponding data to a second relationship between said at least one main optical signal received by said at least one optical signal receiver and said at least one optical identifier detected by said at least one optical signal receiver.